ASSESSING PREFERENCE IN ELDERS WITH DEMENTIA USING MULTIMEDIA AND VERBAL PLEASANT EVENTS SCHEDULES

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The current study compared an abbreviated oral interview version of the Pleasant Events Schedule – Alzheimer's Disease (PES-AD) to a multimedia-supplemented version. Both measures identified multiple preferred items and their scores were moderately correlated ($r = .481$). Direct observations were conducted to determine whether either of the two measures predicted subsequent engagement. For all nine individuals with dementia, items endorsed as preferred by both versions of the PES-AD resulted in high levels of engagement and items endorsed as non-preferred items on both measures resulted in low to moderate levels of engagement. Individuals with MMSE scores of 10 or higher had more stable and differentiated patterns of engagement than individuals with scores below 10. For individuals with higher MMSE scores, items endorsed only by the multimedia version resulted in high engagement levels (i.e., true positive) while items endorsed only on the verbal presentation resulted in low levels (i.e., false positive). Copyright © 2008 John Wiley & Sons, Ltd.

INTRODUCTION

Older adults diagnosed with dementia often experience decrease in overall activity engagement (Mace, 1987) and related decrease in quality of life (Teri & Logsdon, 1991). Loss of cognitive skills or physical or sensory abilities may make previously enjoyable activities difficult to perform (Logsdon & Teri, 1997). A decrease in engagement in pleasant activities may in turn exacerbate other conditions such as depression and health problems (Lewinsohn & Graf, 1973; Logsdon & Teri, 1997; MacPhillamy & Lewinsohn, 1982; Teri & Logsdon, 1991). Subsiding engagement and increasing mood and physical problems can produce increased stress and

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caregiver burden (Teri & Logsdon, 1991). Reinvigorating engagement in preferred activities may result in better programming and improved mood for patients and decreased stress for the caregiver (Teri & Logsdon, 1991).

One common practice with individuals with developmental disabilities that might prove useful for increasing engagement of older adults with dementia is systematic preference assessments. Preference assessments are typically used to identify preferred items that can be incorporated as reinforcers in treatment programs and for developing leisure schedules for individuals with developmental disabilities (Hagopian, Long, & Rush, 2004). One commonly used preference assessment strategy involves presentation of pairs of stimuli nominated by caregiver report (Fisher et al., 1992; Fisher, Piazza, Bowman, & Amari, 1996) with an opportunity to select one of the items. Studies on this preparation and alternative assessment strategies also incorporate direct observation with the stimuli to confirm that stimuli selected as highly preferred actually produce stronger reinforcement effects or higher levels of engagement than stimuli that are less preferred (Carr, Nicholson, & Higbee, 2000; DeLeon & Iwata, 1996; Fisher et al., 1992; Pace, Ivancic, Edwards, Iwata, & Page, 1985).

While preference assessments for individuals with developmental disabilities typically involve direct observation of engagement or selection, studies with older adults with dementia have primarily relied upon self-report and report by others (Staal, Pickney, & Roane, 2003; Teri & Logsdon, 1991). One of the first studies to incorporate preference assessment into programming for older adults examined the use of the Pleasant Events Schedule (PES), a 114-item self-report measure with yes–no questions assessing the subjective enjoyability of several different activities (Teri & Lewinsohn, 1982). Variations of this assessment for adults with dementia, the Pleasant Events Schedule – Alzheimer's Disease (PES-AD), were created as shortened surveys that could be used to sample caregiver report as well as self-report for subjective evaluation of the enjoyability of 46 activities (PES-AD; Teri & Logsdon, 1991) and 20 activities (PES-AD Short Form; Logsdon & Teri, 1997).

While both versions of the PES-AD are widely used and have reasonable reliability estimates (Logsdon & Teri, 1997; MacPhillamy & Lewinsohn, 1982), neither has been evaluated with regard to agreement between endorsed items and level of engagement with the selected activities (i.e., predictive validity). LeBlanc, Cherup, Feliciano, and Sidener (2006) conducted the first study to experimentally examine the use of structured choice-based preference assessments with older adults with cognitive impairments. The PES-AD survey was used to identify items to include in systematic paired presentation preference assessments (i.e., verbal stimuli, textual stimuli, pictorial stimuli, tangible stimuli). Items endorsed as highly preferred on at least one of the assessments were incorporated into separate conditions of a subsequent engagement analysis in which an item was available for 15 min and

observers scored engagement using a partial interval data collection system. The percentage of intervals of engagement with each item was correlated with the percentage selection for the prior preference assessments to determine which modality was most highly correlated with subsequent engagement. For each participant, only one of the four modalities was highly correlated with engagement and the highly correlated modality was subsequently used to offer choices throughout the day resulting in substantial increase in engagement compared to baseline. Thus, the paired stimulus preference assessment format has been validated for use with older adults, but the most effective modality varied from participant to participant.

The paired stimulus preference assessment format is somewhat time consuming and less familiar to dementia care providers than the PES-AD surveys. The PES-AD survey could be a very useful and quick tool if the results could be validated as producing responses that differentially predict subsequent levels of engagement during direct observation. While declines in language functioning may make the use of self-report measures difficult for individuals with moderate to severe dementia (Logsdon & Teri, 1997), the accuracy of the oral interview might be improved if visual stimuli, a characteristic feature of the paired stimulus assessment, could be presented simultaneously with the questions. The current study was designed to examine agreement between a 17-item verbal version of the PES-AD and a multimedia supplemented version for individuals with moderate to severe dementia. The ability of each assessment to predict subsequent engagement was assessed using direct observation measures and items with conflicting results were included to determine whether the two versions differentially generated false positive or false negative results.

METHOD

Participants and Settings

Nine older adults with prior diagnoses of dementia participated in the study (see Table 1 for demographic information). Researchers confirmed the status of cognitive impairment by administering the Mini-Mental State Examination (MMSE; Folstein, Folstein, & McHugh, 1975) individually to each participant. Participants A, C, D, E, F, and H were recruited from adult day care programs serving older adults with cognitive, physical, and medical disabilities in the Midwest and Southwest US Participants B, G, and I were recruited from the locked dementia special care unit at a nursing facility in the Midwest. Sessions were 5–30 min in duration and were conducted in unoccupied rooms in each facility. The rooms contained a table with chairs and relatively few decorative items (e.g., lamp, plant).

Table 1. Participant demographics

Participant	Age	Gender	Setting	MMSE score	Dementia severity
A	85	M	Day care	(15)	Moderate
B	84	F	Nursing care unit	(10)	Moderate
C	74	F	Day care	(14)	Moderate
D	79	M	Day care	(11)	Moderate
E	70	F	Day care	(16)	Moderate
F	75	F	Day care	(7)	Severe
G	82	F	Nursing care unit	(5)	Severe
H	80	F	Day care	(4)	Severe
I	88	F	Nursing care unit	(3)	Severe

Procedures

Preference Assessments

The researcher administered the verbal form of the PES-AD (PES-AD-V) followed by the multimedia form of the PES-AD (PES-AD-MM) at least 24 h but not more than 7 days later. During the PES-AD-V the researcher sat facing the participant and said, 'I am going to read you a list of things that people sometimes like to do. Tell me yes if you enjoy them or no if you don't.' The researchers read each item from the list and waited approximately 20–30 s for an answer. Sample items and activities from the list included: (a) playing dice; (b) playing cards; (c) reading novels; (d) painting; (e) jigsaw puzzles; (f) looking at photo albums; (g) watching news; and (h) indoor gardening. If the participant spoke about an unrelated topic or gave an answer other than yes or no, the researcher asked the question one more time. If no response occurred within 20–30 s, the next question was asked.

For the PES-AD-MM, a laptop computer was placed directly in front of the participant on a table to provide the additional multimedia stimuli. Multimedia stimuli were pictures presented in a Microsoft Power Point presentation, which contained a picture of the item and the question in 36-point Tahoma font text. The researcher sat behind the screen and pointed to the screen after reading each question aloud.

Engagement Analysis

An alternating treatments design was used to investigate the level of engagement associated with items identified in the prior preference assessments. Participant responses to both versions of the PES-AD were compared to identify items in four categories: (a) endorsed on both multimedia and verbal versions (MM + V); (b) non-endorsed on both (Non-endorsed); (c) endorsed on multimedia only (MM only); and

(d) endorsed on verbal only (V only). To keep the number of conditions similar across participants, at least three conditions were conducted. If items were identified in only three of the four categories, the three conditions were conducted. If items were identified in only two categories, two items from one condition (e.g., V only, Participant G) were included. For Participant E, all items were endorsed in both conditions (MM + V) so two items from that category were included and an available item that she had never been observed to use (i.e., shape puzzle) was included to serve as a neutral to non-preferred item (Neutral). Each item was included in a separate observation condition. Each condition was replicated four to seven times and the order of conditions was randomized. At the beginning of each session, the researcher provided an item, described the activity, and stated that the participant could engage in the activity for as long as he or she would like. A participant could terminate an observation at any point by request or by leaving the room.

Dependent Measures and Interobserver Agreement (IOA)

Data were collected on responses given during PES-AD assessments and on engagement during engagement sessions. For each PES-AD assessment, yes/no responses were recorded for each question with pencil and paper. A second independent observer also scored 100% of responses and the two observers agreed on 100% of responses.

Data were collected on engagement during engagement sessions using 15 s partial interval observations and pencil and paper. Engagement was defined as physically touching and/or orienting toward the item. If a participant was engaged for at least 5 s of an interval, the interval was scored as engaged otherwise the interval was scored as non-engaged. An agreement was scored for an interval if both observers recorded either engaged or non-engaged. A disagreement was scored if one observer scored an interval as engaged and the other observer recorded the interval as non-engaged. IOA was calculated by dividing the number of agreements by agreements plus disagreements and multiplying by 100%. IOA was calculated for 61% of engagement sessions (range = 33–80% across participants). Agreement averaged 98.5% (range = 96–100%) for participant A, 99.2% (range = 95–100%) for participant B, 97% for participant C (range = 80–100%), 100% for participant D, 97% (range = 95–100%) for participant E, 100% for participant F, 99% (range = 98–100%) for participant G, 87.5% (range = 65–100%) for participant H, and 100% for participant I.

RESULTS

Table 2 provides the results of the comparison of participant responses on the PES-AD-V and the PES-AD-MM. Both versions identified multiple preferred items for

Table 2. Results of PES-AD-V and PES-AD – MM

Participant	Verbal	Multimedia	Verbal only	Multimedia only
	Total endorsed (% of 17)			
A	15 (88%)	16 (94%)	0	1
B	11 (65%)	12 (71%)	1	0
C	15 (88%)	16 (94%)	0	1
D	14 (82%)	16 (94%)	0	2
E	17 (100%)	17 (100%)	0	0
F	9 (53%)	14 (82%)	1	6
G	17 (100%)	15 (88%)	2	0
H	10 (59%)	12 (71%)	1	3
I	13 (76%)	12 (71%)	4	2

Note: Discrepancies are noted in the two rightmost columns. The Verbal only column indicates items endorsed as preferred on the PES-AD-V but not on the other form and the Multimedia Only category indicates items endorsed on the PES-AD-MM but not on the other form.

each participant with an average of 85% (range = 71–100%) of items endorsed as preferred on the PES-AD-MM and an average of 79% (range = 53–100%) of the items on the PES-AD-V. Although the correlation between the two measures was highly significant ($p < .001$, $r = .481$), there were discrepancies for all participants except E who endorsed all items as preferred on both assessments. Participants A, B, C, D, F, and H endorsed more items on the PES-AD-MM than on the verbal version while Participants G and I endorsed more items on the PES-AD-V than on the multimedia version.

Figure 1 depicts the results for participants A through E who had MMSE scores in the moderate dementia range (i.e., 16–10). Participant A engaged with the MM + V item and the MM only item during all or almost all intervals and engaged with the non-endorsed item much less ($M = 46.6\%$; range = 0–85%). Participant B engaged with the MM + V item ($M = 80\%$; range = 10–100%) and the V only item ($M = 95\%$; range = 75–100%) during most intervals but only engaged with the non-endorsed item during 28% of intervals (range = 0–60%). Thus, the MM + V and non-endorsed responses were confirmed and the V only item was a true positive result. Participant C engaged with the MM + V item and the MM only item during all intervals but was much less engaged with the non-endorsed item ($M = 40\%$ of intervals) indicating that the PES-AD-MM accurately identified an additional preferred item. Similarly, Participant D engaged with the MM + V item during an average of 91% of intervals (range = 65–100%) and at similar levels with the MM only item ($M = 86\%$; range = 45–100% of intervals), while lower engagement was observed with the non-endorsed item ($M = 4\%$; range = 0–5%) and the V only item ($M = 26\%$; range = 5–65%). For Participant E, two MM + V items and a neutral item (i.e., not included in
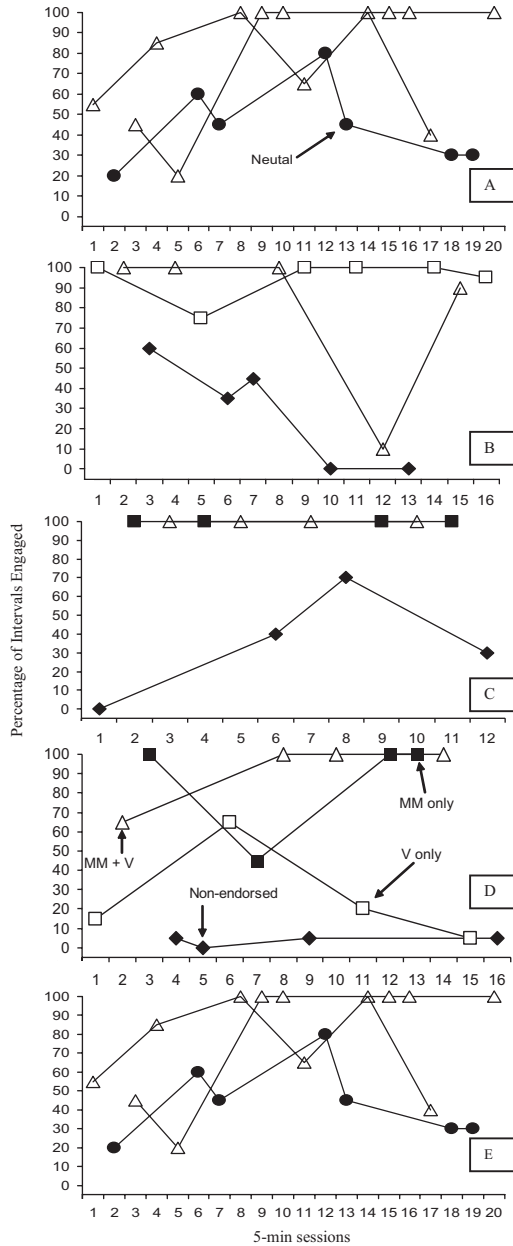
Figure 1. Percentage of intervals with item or activity engagement during 5-min sessions for participants with moderate dementia. Participant E was the only participant to experience the neutral activity conditions and also had two different activities in the MM + V condition.

either assessment, no observed interaction) were presented because all items were endorsed on both versions. Both the first MM + V item ($M = 81\%$; range $= 20$–100%) and the second MM + V item ($M = 74\%$; range $= 40$–100%) produced variable but high levels of engagement while the neutral item resulted in lower engagement ($M = 44\%$; range $= 20$–60%). Thus, responses on the PES-AD-V were confirmed as predicting engagement but the additional benefit of the multimedia stimuli could not be evaluated.

Figure 2 depicts the results for the remaining participants whose MMSE scores fell in the severe dementia range (3–7). Participant F engaged the most with the MM + V item ($M = 66\%$ of intervals; range $= 20$–100%), less with the non-endorsed item ($M = 39\%$ of intervals; range $= 5$–90%), and the least with the MM only item ($M = 6\%$; range $= 0$–15%) suggesting that the item endorsed on the multimedia version was a false positive result. Participant G's analysis was conducted with one MM + V item and two V only items because no items fell into the non-endorsed or MM only categories and no information was available about potential neutral items. The MM + V item produced high engagement (100% of intervals) while the two V only items produced slightly lower engagement ($M = 80\%$ and 72%). Thus, all three items produced reasonable levels of engagement but the items endorsed on both versions produced the most consistent pattern of engagement. Participant H engaged with the MM + V item during all intervals and with the MM only item during 88% of intervals (range $= 70$–100%). The V only item produced much greater variability ($M = 80\%$ of intervals; range $= 5$–100%), as did the non-endorsed item ($M = 42\%$; range $= 10$–100%). Thus, all items endorsed on at least one version produced reasonable levels of engagement compared to a non-endorsed item and endorsement on the MM version was predictive of higher and more stable engagement patterns. Participant I engaged with the MM + V item ($M = 85\%$; range $= 0$–100%) and the MM only item ($M = 70.7\%$; range $= 15$–100%) during most intervals. Lower and more variable levels of engagement were observed with the V only item ($M = 48.5\%$; range $= 20$–100%) and with the non-endorsed item ($M = 32.1\%$ of intervals; range $= 0$–100%).

Figure 3 shows the average percentage of intervals of engagement according to severity of dementia. For participants with moderate dementia (A-E), engagement with MM + V items was high and was similar to engagement with MM only items. For the same group, engagement with non-endorsed items was low while engagement levels with the V only items fell in the mid range. Thus, the multimedia version accurately identified additional items that produced engagement while items endorsed only on the verbal version were generally false positives. For participants with severe dementia, this pattern did not emerge. Engagement with MM + V items occurred at the highest levels ($M = 89\%$; range $= 0$–100%) while engagement with MM only endorsed items ($M = 60\%$; range $= 0$–100%) and V only items ($M = 68\%$;
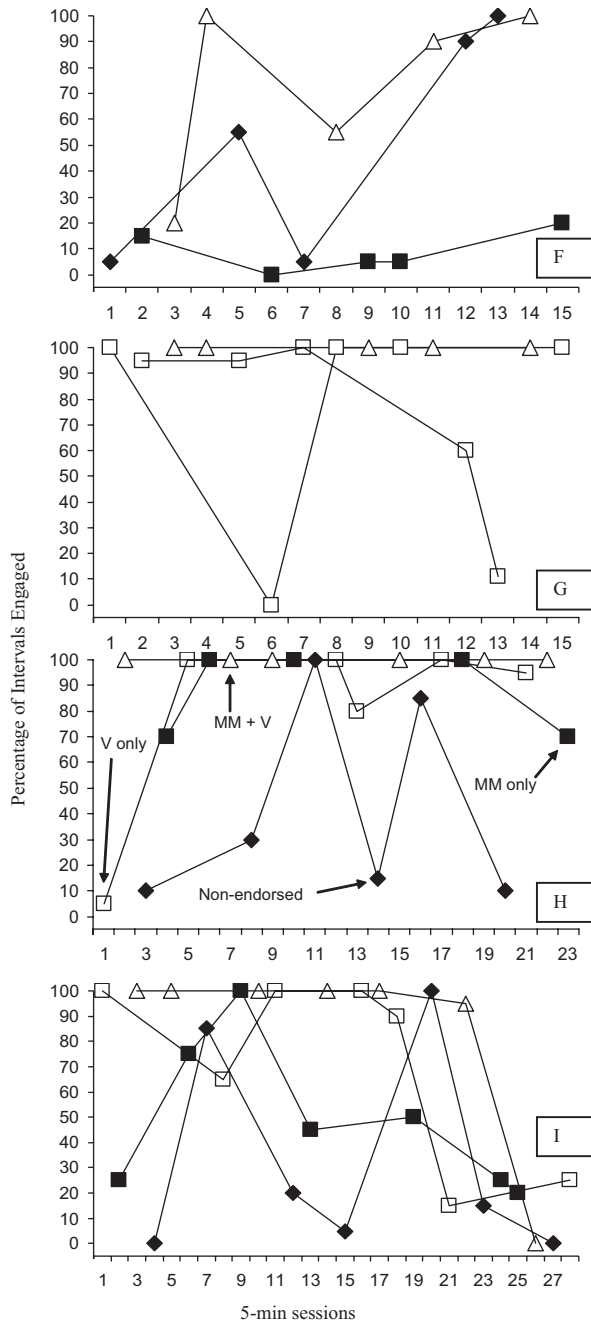
Figure 2. Percentage of intervals with item or activity engagement during 5-min sessions for participants with severe dementia. Participant G has two different activities included in sessions for the V only condition.
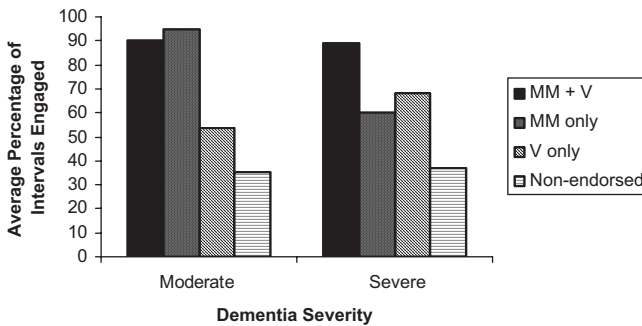
Figure 3. Average percentage of intervals with engagement for individuals with moderate dementia (i.e., MMSE score 10–16) and severe dementia (i.e., MMSE score of 9 or less).

range = 0–100%) occurred at similar moderate levels and engagement with non-endorsed items was lower (M = 37%; range = 0–90%).

DISCUSSION

The PES-AD (Teri & Logsdon, 1991) is a commonly used self-report assessment that attempts to identify activities that individuals with dementia may find enjoyable. However, the risk exists that verbal self-report of a person with dementia may be compromised due to cognitive decline. While initial studies of the reliability of the PES-AD proved promising (Logsdon & Teri, 1997; Teri & Logsdon, 1991), no previous studies had evaluated the predictive validity of the instrument (i.e., does endorsement predict subsequent engagement) as is the standard for preference assessment studies with individuals with developmental disabilities. The current study compared two 17-item versions of the PES-AD and evaluated how well responses to each predicted subsequent engagement. Several conclusions can be drawn from the findings with implications for clinical practice, such as the predictive validity and agreement of verbal reports and the extent to which severity of dementia affected reporting of preference.

First, based on direct observation of subsequent engagement evidence was obtained for good predictive validity of the PES-AD when the results of the two versions corresponded. The two versions correlated moderately well with each other (r = .481). When responses to an item were identical on the two versions, *yes* responses accurately predicted subsequent engagement levels (i.e., MM + V = high engagement) for all nine participants and *no* responses resulted in low to moderate levels of engagement for six of seven participants (i.e., no/neutral = low and variable engagement). These results parallel the findings with individuals with developmental

disabilities using direct observation choice procedures (Fisher et al., 1992; Fisher et al., 1996) but the procedure took little time to conduct. In addition, most participants endorsed the majority of items, suggesting that the original development of the assessment measure accurately identified items that are likely to be enjoyable to many older adults.

Second, important discrepancies were identified for almost all participants and when items were endorsed by only one version (i.e., MM only, V only), engagement levels were more variable and were impacted by level of severity of dementia. For individuals with moderate cognitive impairments, MM only items resulted in high levels of engagement (i.e., true positive) for all the three participants suggesting that the multimedia assessment accurately identified a greater number of preferred items than the verbal assessment. Individuals with severe impairments (MMSE score < 10) were more likely to have variable responding during the engagement analysis. Additional items endorsed on the multimedia version only resulted in high levels of engagement for one of the three participants and the items endorsed on the verbal version only produced even less clear patterns. In addition, individuals with severe impairments appeared to be more affected by factors other than preference (i.e., fatigue, physical discomfort, suppression of all behavior). These findings support the claim of Logsdon & Teri (1997) that increasing dementia may jeopardize the accuracy of self-report. Thus, inclusion of a multimedia presentation for individuals with mild to moderate dementia is recommended to increase accuracy while both versions of the PES-AD should be used for individuals with severe dementia.

Third, unlike previous studies on the PES-AD which included the report of caregivers (Logsdon & Teri, 1997; Teri & Logsdon, 1991), the current study examined the sole report of individuals with dementia. The results suggest that they were generally able to provide meaningful responses during a brief interview, accurately identifying items that were enjoyable and those that were less enjoyable with good agreement between the two versions of the assessment. Overall these findings are encouraging because knowledgeable caregivers are not always available in long-term care settings but either version of this relatively quick assessment (i.e., less than 10 min) can be used to identify items that can result in increased engagement in activity.

A few limitations to this study are worthy of note. The verbal assessment was always conducted prior to the multimedia assessment and order effects may have contributed to the finding that a few more enjoyable items were identified by the multimedia assessment. In addition, for a few participants we were unable to test the additional benefit of the multimedia assessment because relatively few discrepancies occurred and items could not be identified in every category. In spite of these limitations, these findings and those of LeBlanc et al. (2006) provide

preliminary evidence for Staal et al.'s (2003) suggestion that gerontologists can use behavior analytic stimulus preference assessment procedures to produce increase in activity engagement.

ACKNOWLEDGEMENTS

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